Remarks

The Office Action mailed May 5, 2003 has been carefully reviewed and the foregoing amendment and following remarks have been made in consequence thereof.

Claims 1-22 are now pending in this application. Claims 1-22 stand rejected.

The objection to the drawings is respectfully traversed. Figure 1 has been revised to correct typographical errors contained therein. Specifically, reference numeral 12 has been illustrated to point to the radio-based hand-held brake analyzer, and reference numeral 14 has been illustrated to point to the radio-based feed valve. For the above reasons, Applicants request the objection to the drawing be withdrawn.

The Office Action references Skantar '935 as a prior art reference basis for a Section 103 rejection. Applicants believe the reference should be Skantar '934. Specifically, U.S. Patent 5,817,934 recites Elmer T. Skantar as the sole inventor, whereas no '935 reference could be found that lists a Skantar as an inventor. Accordingly, this response is based on the Skantar '935 reference cited as actually being U.S. Patent 5,817,934 to Elmer T. Skantar.

The rejection of Claims 1-8, 11-17, 20 and 21 under 35 U.S.C. § 103 as being unpatentable over Skantar (U.S. Patent 5,817,934) in view of Mixon (U.S. Patent 6,364,432) is respectfully traversed.

Skantar describes an automated terminal test system used to conduct terminal tests of brake equipment (2) on a train consist (1). In one embodiment, Skantar describes a test control box (30) that includes a control (31). The test control box (31) is connected to a head of train locomotive (8) and is accessible from the outside of the locomotive. The test control box is also linked to computer controlled brake equipment, such that when the test control box is activated through the control of a railyard worker, that worker may manipulate the application and release of a brake and may charge and vent a brake pipe. Accordingly, the control box enables the railyard worker to apply and release the brake automatically, and charge and vent the brake pipe automatically using the test control box.

Additionally, Skantar describes another embodiment wherein a portable radio controller (40) is used to conduct the terminal tests of the brake equipment on a train consist. The portable, radio-controlled automated terminal test system includes an end of train transceiver means (19) and a head of train transceiver means (47). The portable radio controller transmits a plurality of brake test signals to the head of train transceiver means. Within this embodiment, a worker may apply and release the brake automatically, and charge and vent the brake pipe automatically using the portable radio controller.

Mixon describes an automated electronic brake control system (10) to control braking on a towed vehicle that includes electric or hydraulically actuated brakes. Notably, Mixon does not describe nor suggest a brake control device for pneumatically-operated brakes such as may be found on a piece of railroad rolling stock. The system includes an upright enclosure (1) having a separable cover, the enclosure containing an energy source (5), a breakaway safety switch (70), a controller with a grade and motion detection device (30), timer (40), relay (80) and circuit breaker (60) and means (50) for connecting the electronic brake control device to the electrical circuitry of a towing vehicle and a towed vehicle. The brake control device is mounted upon the towed vehicle and the controller has capabilities of sensing a change of velocity in at least one direction. Electric circuitry connects the braking circuitry of the towing vehicle to the braking system of the towed vehicle such that when towing vehicle brakes are applied, the brake control device supplies power to the braking system of the towed vehicle proportional to the sensed change in velocity. A hand-held remote receiver/transmitter may be used to alert an operator of a fault in the electronic brake control system self diagnostic routine, to change the operation of the electronic brake control system, to initially set the brakes, to disable or enable the swaying capabilities and/or apply braking force to the brakes.

Applicants respectfully traverse the assertion in the Office Action that the present invention differs from Skantar only in specifying that the portable unit is hand held. Specifically, Claim 1 recites "a system including...at least one radio-based feed valve, and at least one mobile data unit...and the hand-held radio-based analyzer communicates with the mobile data unit and the radio-based feed valve." The method recites "retrieving brake

system data and information from at least one radio-based feed valve through radio communications between each feed valve and the hand-held radio analyzer using the hand-held analyzer." Skantar does not describe nor suggest a radio-based feed valve nor a mobile data unit. Moreover, Skantar does not describe nor suggest retrieving brake system data and information from at least one radio-based feed valve through radio communications between each feed valve and the hand-held radio analyzer using the hand-held analyzer.

Further, Applicants submit that neither Skantar nor Mixon, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 1 recites a method for diagnosing a braking system wherein the method includes "retrieving brake system data and information from at least one radio-based feed valve through radio communications between each feed valve and the hand-held radio analyzer using the hand-held analyzer."

Neither Skantar nor Mixon, considered alone or in combination, describe or suggest retrieving brake system data and information from at least one radio-based feed valve through radio communications between each feed valve and the hand-held radio analyzer using the hand-held analyzer. Rather, Skantar describes a test control box that is electrically coupled to computer controlled brake equipment wherein it is the computer controlled brake equipment that retrieves brake system data and information from a head of train transceiver means and an end of train transceiver means, and Mixon describes a hand-held remote receiver/transmitter that communicates with the brake control system rather than with a radio-based feed valve.

Applicants respectfully traverse the assertion in the Office Action that "[a] reservoir, valve and brake cylinder is inherent in Skantar." Specifically, although "a valve" may be inherent in Skantar, Applicants disagree that a radio-based feed valve, as claimed in the present invention, is inherent in Skantar. Indeed, Skantar does not describe nor suggest a radio-based feed valve.

For the reasons set forth above, Applicants respectfully submit that Claim 1 is patentable over Skantar in view of Mixon.

Claims 2-8 depend, directly or indirectly, from Claim 1. When the recitations of Claims 2-8 are considered in combination with the recitations of Claim 1, Applicants respectfully submit that Claims 2-8 are likewise patentable over Skantar in view of Mixon.

Claim 11 recites a system for diagnosing a braking equipment, wherein the braking equipment includes at least one brake pipe section connected to a reservoir and at least one brake cylinder, and wherein the system includes "a radio-based hand-held analyzer...at least one radio-based feed valve connected to the brake pipe section and configured to communicate with said hand-held analyzer...at least one mobile unit configured to communicate with the hand-held analyzer."

Neither Skantar nor Mixon, considered alone or in combination, describe or suggest a system for diagnosing a braking equipment, wherein the braking equipment includes a radio-based hand-held analyzer and at least one radio-based feed valve connected to the brake pipe section and configured to communicate with the hand-held analyzer. More specifically, neither Skantar nor Mixon, considered alone or in combination, describe or suggest a radio-based feed valve configured to communicate with the hand-held analyzer. Rather, Skantar describes a test control box that is electrically coupled to computer controlled brake equipment wherein it is the computer controlled brake equipment that retrieves brake system data and information from a head of train transceiver means and an end of train transceiver means, and Mixon describes a hand-held remote receiver/transmitter that communicates with a brake control system, but Mixon does not describe that the hand-held remote receiver/transmitter communicates with a radio-based feed valve.

For the reasons set forth above, Applicants respectfully submit that Claim 11 is patentable over Skantar in view of Mixon.

Claims 12-17 depend directly from Claim 11. When the recitations of Claims 12-17 are considered in combination with the recitations of Claim 11, Applicants respectfully submit that Claims 12-17 is likewise patentable over Skantar in view of Mixon.

Claim 20 recites a hand-held analyzer for testing and diagnosing a brake system including a radio-based feed valve, said hand-held analyzer comprising, an antenna for communicating with the feed valve, a user interface for inputting data and commands to be communicated to the feed valve, and a display for viewing data received from the feed valve, said hand-held analyzer configured to "utilize said user interface to input a command to query the feed valve for brake system data indicative of an operational state of the brake system...transmit the query to the feed valve utilizing said antenna...receive the brake system data indicative of an operational state of the brake system utilizing said antenna...display the brake system data on said display."

Neither Skantar nor Mixon, considered alone or in combination, describe or suggest a hand-held analyzer for testing and diagnosing a brake system including a radio-based feed valve, the hand-held analyzer comprising, an antenna for communicating with the feed valve, a user interface for inputting data and commands to be communicated to the feed valve, and a display for viewing data received from the feed valve, the hand-held analyzer configured to utilize the user interface to input a command to query the feed valve for brake system data indicative of an operational state of the brake system, transmit the query to the feed valve utilizing the antenna, receive the brake system data indicative of an operational state of the brake system utilizing the antenna, display the brake system data on the display. Specifically, neither Skantar nor Mixon, considered alone or in combination, describe or suggest a hand-held analyzer configured to utilize a user interface to input a command to query a feed valve for brake system data. Rather, Skantar describe a test box that is mounted to the exterior of a head of train locomotive and that communicates commands to computer controlled brake equipment within the head of train locomotive, and Mixon describes a hand-held remote receiver/transmitter that communicates with the brake control system rather than with a radio-based feed valve.

Applicants respectfully traverse the assertion in the Office Action that Skantar inherently includes a display. Skantar does not describe nor suggest a display. Skantar describes activating a test function, such as a brake pipe leakage test and then a railyard worker must walk the length of the train visually inspecting the brake pipe to receive feedback as to the health of the brake system. Skantar only describes a command functionality for the test box wherein controls are activated but, Skantar does not describe or suggest a display associated with the test box.

For the reasons set forth above, Applicants respectfully submit that Claim 20 is patentable over Skantar in view of Mixon.

Claim 21 depends, directly or indirectly, from Claim 20. When the recitations of Claim 21 are considered in combination of the recitations of Claim 20, Applicants respectfully submit that Claim 21 likewise is patentable over Skantar in view of Mixon.

For the reasons set forth above, Applicants respectfully request that the §103 rejection of Claims 1-8, 11-17, 20, and 21 be withdrawn.

The rejection of Claims 9-10, 18-19, and 22 under 35 U.S.C. §103 as being unpatentable over Skantar U.S. Patent 5,817,934) as modified by Mixon (U.S. Patent 6,364,432) and further in view of Bessler et al. (U.S. Patent 6,246,950) is respectfully traversed.

Skantar and Mixon are described above. Bessler et al. describe a model-based incipient failure detection system that includes at least one replaceable unit, at least one sensor to generate signals representative of current engine conditions related to the at least one replaceable unit, and a controller (28) that includes an embedded replaceable unit model algorithm. Current locomotive operating conditions and ambient conditions are utilized within the algorithm to generate a model-based predicted value for the at least one sensor. The controller compares the at least one sensor signals to the model-based predicted values for calculating deviations between them and for detecting incipient failure of the at least one replaceable unit. The data collected from the sensors are sent to a remote service center (50)

through a communications link (52), for example, a "geo-synchronous," "L-band" satellite system, or a "Little Leo" system. Although, Bessler et al. describe sending data through a communications link to a work station, a minicomputer, a microcomputer, a supercomputer or an onboard locomotive monitoring sub-system, Bessler et al. do not describe nor suggest a network or a web page.

Claims 9 and 10 depend, directly or indirectly, from independent Claim 1 which recites a method for diagnosing a braking system wherein the method includes "retrieving brake system data and information from at least one radio-based feed valve through radio communications between each feed valve and the hand-held radio analyzer using the hand-held analyzer."

None of Skantar, Mixon, nor Bessler et al. considered alone or in combination, describe or suggest retrieving brake system data and information from at least one radio-based feed valve through radio communications between each feed valve and the hand-held radio analyzer using the hand-held analyzer. Rather, Skantar describes a test control box that is electrically coupled to computer controlled brake equipment wherein it is the computer controlled brake equipment that retrieves brake system data and information from a head of train transceiver means and an end of train transceiver means, and Mixon describes a hand-held remote receiver/transmitter that communicates with the brake control system rather than with a radio-based feed valve, and Bessler et al. describe a model-based incipient failure detection system that includes at least one sensor wherein data collected from the sensors are sent to a remote service center through a communications link to a computer.

For the reasons set forth above, Applicants respectfully submit that Claim 1 is patentable over Skantar as modified by Mixon and further in view of Bessler et al.

Claims 9 and 10 depend, directly or indirectly, from Claim 1. When the recitations of Claims 9 and 10 are considered in combination with the recitations of Claim 1, Applicants respectfully submit that Claims 9 and 10 are likewise patentable over Skantar as modified by Mixon and further in view of Bessler et al.

Claims 18 and 19 depend, directly or indirectly, from independent Claim 11 which recites a system for diagnosing a braking equipment, wherein the braking equipment includes at least one brake pipe section connected to a reservoir and at least one brake cylinder, and wherein the system includes "a radio-based hand-held analyzer...at least one radio-based feed valve connected to the brake pipe section and configured to communicate with said hand-held analyzer...at least one mobile unit configured to communicate with the hand-held analyzer."

None of Skantar, Mixon, nor Bessler et al., considered alone or in combination, describe or suggest a system for diagnosing a braking equipment, wherein the braking equipment includes a radio-based hand-held analyzer and at least one radio-based feed valve connected to the brake pipe section and configured to communicate with the hand-held analyzer. More specifically, none of Skantar, Mixon, nor Bessler et al., considered alone or in combination, describe or suggest a radio-based feed valve configured to communicate with the hand-held analyzer. Rather, Skantar describes a test control box that is electrically coupled to computer controlled brake equipment wherein it is the computer controlled brake equipment that retrieves brake system data and information from a head of train transceiver means and an end of train transceiver means, and Mixon describes a hand-held remote receiver/transmitter that communicates with a brake control system, but not a radio-based feed valve, and Bessler et al. describe a model-based incipient failure detection system that includes at least one sensor wherein data collected from the sensors are sent to a remote service center through a communications link to a computer.

For the reasons set forth above, Applicants respectfully submit that Claim 11 is patentable over Skantar as modified by Mixon and further in view of Bessler et al.

Claims 18 and 19 depend directly from Claim 11. When the recitations of Claims 18 and 19 are considered in combination with the recitations of Claim 11, Applicants respectfully submit that Claims 18 and 19 are likewise patentable over Skantar as modified by Mixon and further in view of Bessler et al.

Claim 22 depends, directly or indirectly, from independent Claim 20 which recites a hand-held analyzer for testing and diagnosing a brake system including a radio-based feed

valve, said hand-held analyzer comprising, an antenna for communicating with the feed valve, a user interface for inputting data and commands to be communicated to the feed valve, and a display for viewing data received from the feed valve, said hand-held analyzer configured to "utilize said user interface to input a command to query the feed valve for brake system data indicative of an operational state of the brake system...transmit the query to the feed valve utilizing said antenna...receive the brake system data indicative of an operational state of the brake system utilizing said antenna...display the brake system data on said display."

None of Skantar, Mixon, nor Bessler et al., considered alone or in combination, describe or suggest a hand-held analyzer for testing and diagnosing a brake system including a radio-based feed valve, the hand-held analyzer comprising, an antenna for communicating with the feed valve, a user interface for inputting data and commands to be communicated to the feed valve, and a display for viewing data received from the feed valve, the hand-held analyzer configured to utilize the user interface to input a command to query the feed valve for brake system data indicative of an operational state of the brake system, transmit the query to the feed valve utilizing the antenna, receive the brake system data indicative of an operational state of the brake system utilizing the antenna, display the brake system data on the display. Specifically, none of Skantar, Mixon, nor Bessler et al., considered alone or in combination, describe or suggest a hand-held analyzer configured to utilize a user interface to input a command to query a feed valve for brake system data. Rather, Skantar describe a test box that is mounted to the exterior of a head of train locomotive and that communicates commands to computer controlled brake equipment within the head of train locomotive, but Skantar does not describe a hand-held analyzer configured to query a feed valve for brake system data, Mixon describes a hand-held remote receiver/transmitter that may be used to alert an operator of a fault in a self diagnostic routine, to change the operation of the electronic brake control system, to initially set the brakes, to disable or enable the swaying capabilities and/or apply braking force to the brakes, but Mixon does not describe a hand-held analyzer configured to query a feed valve for brake system data, and Bessler et al. describe a model-based incipient failure detection system that includes at least one sensor

wherein data collected from the sensors are sent to a remote service center through a communications link to a computer.

For the reasons set forth above, Applicants respectfully submit that Claim 20 is patentable over Skantar as modified by Mixon and further in view of Bessler et al.

Claim 22 depends, directly or indirectly, from Claim 20. When the recitations of Claim 22 are considered in combination of the recitations of Claim 20, Applicants respectfully submit that Claim 22 likewise is patentable over Skantar as modified by Mixon and further in view of Bessler et al.

For the reasons set forth above, Applicants respectfully request that the §103 rejection of Claims 9, 10, 18, 19, and 22 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

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